MODIS Technical Team Meeting
Thursday, March 29, 2001
3:00 PM

Vince Salomonson chaired the meeting. Present were Dorothy Hall, Mike Roberto, Al Fleig, Eric Vermote, Sol Broder, Bill Barnes, Wayne Esaias, Bruce Guenther, Steve Kempler, and Barbara Conboy, with Rebecca Lindsey taking the minutes.

1.0 Schedule of Upcoming Events

- Terra Cloud Mask Conference — May 8-9, 2001
  University of Wisconsin-Madison

- Ocean Color Science Meeting — May 22-24, 2001
  San Diego, CA

2.0 Meeting Minutes

2.1 Instrument Update

Roberto reiterated what Mark Domen reported last week—that TRW is now saying Aqua launch may be delayed to December 20th, 2001. That date assumes things go very well from this point on. Roberto didn't think that they had a launch slot yet. For Terra MODIS, things are operating fairly smoothly, with no formatter resets. Barnes added that we experienced some data loss Wednesday, March 28, and the cause is being investigated.

Salomonson asked if things were on track for the upcoming June reprocessing, and Guenther reported that MCST has encountered some technical issues that are hindering the development of an appropriate minimum degradation model. They will likely be able to deliver the necessary code changes by mid-May. MCST plans a delivery for the SAFARI period next week as scheduled, but there will probably be an additional delivery necessary, and it will not be ready then.

2.2 GES DAAC Update

Kempler reported that the DAAC had some hardware and software problems the past week, but things had settled down. He reported that they are almost at 200 consecutive days of full processing, and that although there were still some days with holes in them, they have gone through all the data they have once. Salomonson asked if the "hiccups" with EDOS delivery seem to just come and go, and Kempler said yes, that they are reordering about 5% of the data.

The DAAC is preparing for reprocessing by pulling together all the necessary L0 data as well as the new ESDTs.

Salomonson asked about data distribution issues, indicating that he had heard recently about someone being unable to get data. Kempler said that the user's difficulty highlighted some of the problems of the data distribution system. One problem was the lack of subsetting tools to reduce volume. He encountered a 15 GB limit for ordering, and since he couldn't subset, he just couldn't get the data.

Kempler also said that he had revised the draft policy for handling science software distribution, and reminded the group that he had sent it around for review and comments. He also reported that ECS hadn't been handling the capture of science software packages well, and that Stephen Berrick is creating a generic ESDT to allow packages to be inserted into the archive as if they were data.

Esaias asked about user support and who should provide it. Kempler indicated that DAAC personnel aren't really able to answer questions about science code. Esaias acknowledged that the science team has the expertise, but not the time. The group discussed ways to handle the issue.

Vermote asked about the toolkit, and whether it would come with the software. Kempler indicated it would not; the toolkit is available via the DAAC web pages, and would continue to be.

2.3 MODAPS Update

Fleig reported that ocean code is being integrated into MODAPS Version 2. Salomonson asked about the geolocation issue raised at the last meeting. Fleig reported that many things can cause the geolocation to flicker, and that even if you had two correctly located pixels, if they are from a different time, the center can move around because there is nothing in the flight of the instrument that causes the scan to start in the same place as it did before.

2.4 Cryosphere Update

Hall reported that the public release of the Sea Ice product is scheduled for April 13, with the data series beginning on January 17th. The product will be provisional.

2.5 NOAA/NESDIS

Bruce Ramsay was unable to attend the meeting, but he provided an update via email. He provided a presentation (Attachment 1) given by Gene Legg, OSDPD, at this month's Satellite Products and Service Review Board meeting. In addition Ramsay reported that an article entitled "The NOAA-MODIS Near-real-time System" by P. Haggerty and K. Sprietzer, STC; G. Legg, NOAA; and R. Luczak, CSC; had been submitted to the Product Oversight Panels. He

submitted the article's cover memo (Attachment 2) and indicated the full article would be available in coming weeks.

2.6 Oceans Update

Esaias reported that the Ocean group would be meeting in Miami April 3-5 to prepare for reprocessing and recompetition. Salomonson asked Esaias to summarize a discussion he had heard about the two types of SST algorithms, and their accuracy as far as MODIS is concerned. Esaias indicated that there are two approaches for setting coefficients for atmospheric correction algorithms: the radiative transfer approach, which can provide definitive uncertainty allocations, and the buoy regressive approach. The radiative transfer approach has been off by a degree or so compared to the buoys, and the PI's are unsure whether the instrument calibration/characterization, or the radiative transfer calculations, are the source of the discrepancy. The radiance bias amounts to about 0.3K, which produces a bias of up to 1 K in the thermal (or 11-12 micrometer or band 31-32) SST product. For the mid-wave region (4 micrometer or bands 20,22,23), this produces a difference of up to 4 K at high satellite zenith angles.

Guenther commented that for Bands 31 and 32, the top of the atmosphere brightness temperature matches well for cold scenes, but the 300 mK problem appears at warmer temperature, using the radiative transfer approach. Wan's independent results also support a bias of about the same amount as is found at Miami, between these bands.

Salomonson asked how can this difference be reconciled with the reports that he had heard about the 4μm channel seeing better than 11 and 12μm channels. Esaias indicated that what this means is that we get a clearer picture of the surface in the tropics because the mid-wave bands are intrinsically much less sensitive to water vapor emission, but the absolute accuracy (bias) still needs improvement.

The good news, however, is that the alternative (intermediate) regressive approach can be used to produce SST products with little apparent bias (excepting skin/bulk issues) until issues with the radiative transfer approach and instrument characterization can be resolved by further work by the several PI's, MCST, and SBRS. Resolution is required in order to apply physically meaningful uncertainty (accuracy) limits expected by the climate community. Terra IR bands were not characterized at the system level pre-launch. Results from M-AERI are accumulating, but it will be years until a sufficient number of match-ups exist to develop robust uncertainties with the regressive approach.

2.7 General Discussion

Salomonson presented several of the posters that MAST designed for the walls of HQ. The group discussed which ones they would like best. Esaias suggested a gulf stream SST image.

Salomonson informed the group that there was an invitation for submissions to a special issue of an IEEE publication for Aqua, and Claire Parkinson wanted to know if MODIS wanted an article highlighting the differences between Aqua and Terra. She also suggested an article on which algorithms can be used for both instruments, and also an article on the science benefits of having morning and afternoon observations. She wants an outline on what we might contribute by the end of April.

Vermote asked about the status of the Terra night/Aqua day orbital track overlap. Salomonson reported that there might be a readout conflict, which might force them to be spaced a bit. Esaias indicated that he had talked with Parkinson and Bill Guion, and they are not sure the overlap can be done, but they are studying it.

Salomonson indicated that he was aware of some code developers uncertainty over the metadata requirements for the June reprocessing. Broder indicated that Mike Jones is coordinating the effort, and suggested that the issue be brought to his attention.

Esaias reported that the predicted ephemeris data is way off, according to Gene Legg from NOAA/ NESDIS. Fleig indicated that Dan Marinelli might be a good contact for discussing the problem. Esaias asked whether Aqua would have good predicted ephemeris data. Fleig said that he didn't think there was a requirement on flight dynamics for accuracy of those data. There was a general discussion of how the definitive ephemeris would be run, and when a 24-hour cycle should begin.

3.0 Action Item

3.1 Discipline leads to meet to resolve the issue of beta-release code and science-quality code, and what we need to say about it.

Status: Open.

3.2 Technical team to discuss further the issue of predictive ephemeris data and how to improve it.